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Docket: 6970.02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Jeffrey K. Drogue	
Application No.:	10/628,588	
Filing Date:	July 28, 2003	Examiner: Not Yet Known
Title:	<b>FLUID AND BIOAEROSOL MANAGEMENT</b>	Group Art Unit: 3761

TRANSMITTAL LETTER

**Mail Stop PETITION**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

I hereby certify that this document is being sent via First Class U.S. mail addressed to: **Mail Stop PETITION**, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 22 day of June, 2004.

Kris Anne Popovits  
KrisAnne Popovits

Dear Sir:

The following documents are enclosed in connection with the above-referenced patent application:

1. Request For Reconsideration (4 pages);
2. Exhibits A - F (in support of Request for Reconsideration) (27 pages);
3. Fee Transmittal (1 page);
4. Check No. 994295 in the amount of \$130 to cover Petition fee; and
5. Return Receipt Postcard.

Respectfully submitted,

DORSEY & WHITNEY LLP  
Customer Number 25763

Date: June 22, 2004

By: David E. Bruhn  
David E. Bruhn  
Reg. No. 36,762  
Intellectual Property Department  
Suite 1500  
50 South Sixth Street  
Minneapolis, MN 55402-1498  
(612) 340-6317

# APPLICATION FEE TRANSMITTAL SHEET (FY 2004)

Complete if Known

Application No.	10/628,588
Filing Date	July 28, 2003
First Named Inventor	Jeffrey K. Drogue
Group Art Unit	3761
Examiner Name	Not Yet Known
Atty. Docket Number	6970.02

## METHOD OF PAYMENT (Check One)

1. ☒ The Director is hereby authorized to charge indicated fees and credit any over payments to:  
 Deposit Account No.: 04-1420  
 Deposit Account Name: DORSEY & WHITNEY LLP
- ☒ Charge any additional fee required under 37 C.F.R. 1.16 and 1.17  
☒ Applicant claims small entity status (see 37 C.F.R. 1.27)
2. ☒ Check Enclosed

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity Fee	Small Entity Fee	Fee Description
160	80	<input type="checkbox"/> Provisional Filing Fee
770	385	<input type="checkbox"/> Utility Filing Fee
340	170	<input type="checkbox"/> Design Filing Fee
770	385	<input type="checkbox"/> Reissue Filing Fee

Subtotal (1) N/A

### 2. EXTRA\* CLAIM FEES

	Number Claims	Prior	Extra	Fee from Below*	Fee Paid
Total	-	20	=	x	=
Indep.	-	3	=	x	=
Multiple Dependent Claims			=	x	=

Subtotal (2) N/A

### \*Calculation of Extra Claim Fees

Large Entity Fee	Small Entity Fee	Fee Description
18	9	Claims in excess of 20
86	43	Independent claims in excess of 3
290	145	Multiple dependent Claim
86	43	Reissue independent claims over original patent
18	9	Reissue claims in excess of 20 and over original patent

## FEE CALCULATION (Continued)

### 3. ADDITIONAL FEES

Large Entity Fee	Small Entity Fee	Fee Description	Fee paid
50	25	Surcharge - late provisional filing fee or cover sheet	
130	65	Surcharge - Late nonprovisional filing fee or oath	
180	180	Submission of IDS	
40	40	Recording each patent assignment per property (times number of properties)	
110	55	Extension for reply within first month	
420	210	Extension for reply within second month	
950	475	Extension for reply within third month	
1,480	740	Extension for reply within fourth month	
2,010	1,005	Extension for reply within fifth month	
770	385	Submission After Final 1.129	
330	165	Notice of Appeal	
330	165	Filing a brief in support of an appeal	
290	145	Request for oral hearing	
110	55	Terminal Disclaimer Fee	
130	130	Petitions to the Commissioner	\$130
50	50	Petitions related to provisional applications	
1,330	665	Utility/Reissue Issue Fee (including advance copies)	
480	240	Design Issue Fee (inc. advance copies)	
770	385	Request for Continued Examination (RCE)	
300	300	Publication fee for early, voluntary, or normal publication	
300	300	Publication fee for re-publication	
110	55	Petition to Revive - unavoidable	
1,330	665	Petition to Revive - unintentional	

OTHER FEE (specify)

Subtotal (3) \$130

Total Amount of Payment: \$130

Submitted by:

CUSTOMER NUMBER <b>25763</b>	DORSEY & WHITNEY LLP	Intellectual Property Department Suite 1500, 50 South Sixth Street Minneapolis, MN 55402	
Name: David E. Bruhn	Signature: <i>David E. Bruhn</i>	Phone No.: (612) 340-6317	Fax No.: (612) 340-8856
		Reg. No.: 36,762	Date: <i>June 22, 2004</i>



Docket: 6970.02

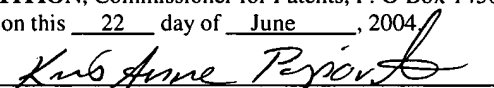
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Jeffrey K. Droque	
Appln. No.:	10/628,588	
Filing Date:	July 28, 2003	Examiner: Not Yet Known
Title:	<b>FLUID AND BIOAEROSOL MANAGEMENT</b>	Group Art Unit: 3761

**REQUEST FOR RECONSIDERATION**

Mail Stop **PETITION**  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, Virginia 22313-1450

I hereby certify that this document is being sent via First Class U. S. mail addressed to: Mail Stop **PETITION**, Commissioner for Patents, P. O Box 1450, Alexandria, VA 22313-1450, on this 22 day of June, 2004.

  
KrisAnne Popovits

Sir:

This Request for Reconsideration is submitted in response to a Decision Refusing Status under 37 CFR 1.47(a), mailed April 26, 2004.

**Background**

On February 18, 2004 the Applicants filed a Petition under 37 CFR 1.47(a) because one of the named inventors, Jeffrey K. Droque ("Droque") refused to join in the application. The Office dismissed the Petition on the basis that Applicants failed to show Droque was presented with a copy of the application papers.

**Request**

In view of the evidence submitted herewith, and the evidence previously submitted with the Petition, Applicants request reconsideration of the Decision refusing status.

**Evidence**

Applicants hereby submit further evidence, Exhibits A-F enclosed herewith, supporting the following conclusions:

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- a bona fide attempt was made to present a copy of the application papers to non-signing inventor Drogue;

- Drogue understood the content of the application, including the scope thereof and the application prosecution process;

- Drogue was provided with a copy of the priority application, U.S. Provisional Patent Application No. 60/264,871 (the "provisional application"); and,

- as stated in the Manual of Patent Examining Procedure, 409.03(d), Drogue was "apprised of the application," understood the invention, and knew what he was being asked to sign.

Exhibit A On January 26, 2001, the undersigned sent facsimile correspondence to inventor Drogue, at his employer at the time, JLJ Medical Devices International, LLC, ("JLJ"), forwarding a copy of the specification and drawings of the provisional application to be filed with the U.S. Patent and Trademark Office.

Exhibit B On January 30, 2001, the undersigned sent correspondence to Dr. Leonard S. Schultz, co-inventor of subject application, at JLJ, employer of Drogue at the time, forwarding an "as-filed" copy of the provisional application.

Exhibit C On February 2, 2001, in response to Drogue's request, a legal assistant of the undersigned sent correspondence to Drogue forwarding copies of prior art associated with the filed application. As in the case of Exhibits A and B, this correspondence was sent to Drogue at the offices of his employer, JLJ.

Exhibit D On June 30, 2001, the undersigned sent correspondence to Mr. Barry Thompson, co-inventor in this application, at JLJ, forwarding an Assignment document and requesting signatures of the three inventors: J. Drogue, L. Schultz, and B. Thompson.

The following two exhibits, Exhibit E and Exhibit F, were previously submitted as Exhibit B and Exhibit C with the Petition filed February 18, 2004. However, as previously submitted with the Petition, Exhibit B (herewith as Exhibit E), the undersigned's e-mail dated July 2, 2002, inadvertently did not include the entire contents of a Drogue e-mail dated June 21,

2002. Submitted herewith as Exhibit E is the entire content of the Drogue e-mail dated June 21, 2002, which reflects Drogue's knowledge about the subject patent application and claims. Note particularly, e.g., Drogue's "extend the claims" comment in his points 1-3. Clearly, Drogue could not have made these comments without reviewing the application and understanding its scope.

**Exhibit E** On July 2, 2002, the undersigned sent e-mail correspondence, with an attached Power of Attorney, to inventor Drogue, requesting his signature for the Power of Attorney. (Note: As explained in the preceding paragraph, the undersigned's e-mail covers the Drogue June 21, 2002 e-mail to undersigned.)

**Exhibit F** On July 8, 2002, Agent received e-mail confirmation that Drogue received and opened the July 2, 2002 e-mail. There was no response from Drogue.

Notwithstanding his knowledge of the invention, the application and the patent application process, and all the attempts to contact Drogue, including the attempts identified in the original Petition, Drogue has failed to join the application, and there has been no response or communication from him.

### **Last Known Address**

The last known address of inventor Drogue is: Mr. Jeffrey K. Drogue, 5117 Washburn Avenue South, Minneapolis, Minnesota 55410.

### **Fee**

A check in the amount of \$130 is enclosed herewith to cover the fee associated with this Request. The Commissioner is also hereby authorized to charge any underpayment or credit any overpayment to Deposit Account No. 04-1420.

### **Conclusion**

In light of the evidence submitted herewith, and the evidence submitted with the Petition, Applicants respectfully request reconsideration of the Decision refusing status and grant of the

Petition. The Office is invited to telephone the undersigned if doing so will facilitate reconsideration and grant.

Respectfully submitted,

DORSEY & WHITNEY LLP  
Customer Number 25763

Date:

June 22, 2004

By:

David E. Bruhn

David E. Bruhn  
Reg. No. 36,762  
Intellectual Property Department  
Suite 1500  
50 South Sixth Street  
Minneapolis, MN 55402-1498  
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\*\*\* TX REPORT \*\*\*  
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DORSEY & WHITNEY LLP  
220 SIXTH STREET  
MINNEAPOLIS, MINNESOTA 55402

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Date: January 26, 2001

Total Number of Pages: 17

TO: Jeff Drogue

FAX #: (952) 929-3984

FIRM NAME: JLJ International

TELEPHONE #: (952) 929-3881

---

FROM: David E. Bruhn

TELEPHONE #: (612) 340-6317

COMMENTS:

Jeff, the application for the connector follows. We will file it by 3:30 this afternoon.

EXHIBIT A



PROVISIONAL  
APPLICATION  
entitled  
  
FLUID and BIO-AEROSOL MANAGEMENT  
  
of

Jeffrey K.Drogue  
5117 Washburn Avenue South  
Minneapolis, Minnesota 55410

Leonard S. Schultz  
11036 Boone Circle  
Bloomington, Minnesota 55438

Barry M. Thompson  
6258 Fernbrook Lane North  
Maple Grove, Minnesota 55311

Express Mail mailing label number \_\_\_\_\_

Date of Deposit \_\_\_\_\_

I hereby certify that this paper or fee is being deposited with  
the United States Postal Service "Express Mail Post Office to  
Addressee" service under 37 CFR 1.10 on the date indicated  
above and is addressed to the Assistant Commissioner for  
Patents, Washington D.C. 20231

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

Title: FLUID and BIO-AEROSOL MANAGEMENT

Background

The present invention relates to devices and methods for material handling and, in one embodiment, a fluid, i.e., gas and liquid, and bio-aerosol management system and method suitable for use in the medical field. The present invention encompasses a method of handling, managing, measuring and/or disposing of fluids, including gases and liquids and, in some embodiments, solids.

The present invention may be well suited for use in the medical field, particularly in surgery, whether surgical procedures are being carried out in an operating room(s) or other clinical locations. It is well suited for use in controlling the flow of gases, liquids, fluids and bio-aerosol and/or biohazardous material used during or produced during surgical procedures. It provides for the removal of bio-aerosols, fluids and liquids which are associated with surgical procedures, and provides for assessing or measuring the quantity of liquids, e.g., saline solution, blood, plasma and the like, produced or used during surgical procedures.

U.S. Patents 5,019,060 (Goosen), 4,184,510 (Murry et al.), 4,704,106 (Shave et al.), 5,345,928 (Lindkvist) and 5,707,086 Treu et al.) disclose examples of the use of vacuum in the medical field, including a liquid collection device for use with surgical procedures (the 5,019,060 patent). The disclosures of these five patents, particularly as to the use of vacuum in the medical field, are incorporated herein by reference.

U.S. Patents 6,131,571 (Lampotang et al.), 5,836,909 (Cosmescu) and 4,453,937 (Kurtz et al.), disclose the use of various type of flow measuring devices including air flow meters (the 4,453,937 patent), and/or pressure and/or flow and fluid sensors (the 5,836,909 patent). The disclosures of these three patents, particularly as to the flow measuring and sensing devices, is incorporated herein by reference.

In one embodiment, the present invention comprises a system comprising a centralized evacuation system, one or more “end effectors” and a connector for operably coupling the one or more end effectors to the centralized evacuation system.

In one embodiment, the present invention comprises a connector for operably coupling one or more end effectors to a wall port of a central vacuum system, wherein the connector facilitates the coupling of the one or more end effectors and is adapted to receive both gaseous and liquid material. In some embodiments, the connector is adapted to separate gaseous and liquid material and, in some embodiments, to measure and/or display the quantity of such gaseous and liquid material. In some embodiments, the connector is adapted to modify or adjust the vacuum pressure provided by the central vacuum and/or the flow rate of the material being picked up.

One centralized evacuation system of a type suitable for use in the system of the present invention is described in U.S. Patent 5,264,026, the disclosures of which patent are incorporated herein by reference. The patent discloses a centralized system for removing the plume resulting from surgical procedures, wherein the plume is drawn away from the surgical field by a vacuum. The disclosed system is suitable for vacuuming or suctioning both liquids and gas and includes a central suction device that includes a centrifugal separator and a vacuum producer. The central system is “central” because it

is located in a mechanical room which is removed from or remote with respect to one or more operating rooms served by the vacuum system. Such systems include a suitable network of conduits or piping, and typically include wall inlets, ports or wall-mounted boxes with openings or ports for connecting a flexible conduit to an end effector. These end effectors may take various forms including that described in U.S. Patent 4,921,492, the disclosure of which is incorporated herein by reference, and/or various embodiments thereof. As used herein the term "end effectors" is intended to encompass any structure adapted to provide for bringing a vacuum adjacent to a material or item to pick or suck up the material or item, and may include typical tubular wands or cautery tools carrying generally tubular devices which may be positioned adjacent to a surgical field to provide for removal of bio-aerosol gases and/or liquids. The term is also intended to encompass such structures and devices adapted to be applied to picking up or handling both liquid and gaseous material and, in some instances, solid material.

#### Brief Description of the Figures

Figure 1 depicts one embodiment of a system in accordance with the present invention.

Figure 2 depicts one embodiment of a connector in accordance with the present invention.

Figure 3 is an elevational view of the connector depicted in Figure 2.

Figure 4 depicts one embodiment of an end effector with a fluid flow depicted, and Figure 4a depicts another end effector.

Figure 5 depicts an adapter for coupling to the connector for adapting the present invention to pick up solid material.

Figure 6 depicts a solid receiving adapter box in accordance with the present invention.

### Description

Features and advantages of the fluid and bio-aerosol device and method of the present invention will become apparent and understood with reference to the above-noted drawings, this description and the descriptive material enclosed herewith, including the described embodiment of a connector or adaptor device for use in the system of the present invention.

With regard to fastening, mounting, attaching or connecting the components of the system of the present invention to form the connector or the system as a whole, unless specifically described otherwise, such are intended to encompass conventional fasteners such as screws, nut and bolt connectors, snap rings, clamps, such as hose clamps, screw clamps and the like, rivets, toggles, pins and the like. Components may also be connected or coupled by welding, friction fitting or deformation. Electrical components and connections may be made using appropriate electrical components and connection methods including conventional components and connectors, suitable display devices such as digital or analog devices, LED's or other light sources and the like, and suitable microprocessor or integrated circuit components. Measuring devices, such as flow meters, sensors, transducers and the like, whether for measuring flow, flow rate, or liquid or gaseous quantities, may be selected from such measuring devices which are suitable for use in the present invention. Unless otherwise specifically disclosed or taught, materials for making components of the present invention may be selected from appropriate materials such as metal, metallic alloys, fibers, plastics and the like, and appropriate manufacturing and/or production methods including casting, extruding, molding and machining may be used.

In one embodiment, the present invention comprises a central vacuum system comprising a central vacuum source, one or more end effectors and a connector interposed between the vacuum source and the one or more end effectors, wherein the connector has at least one port for receiving gaseous and liquid fluids. In one embodiment, the system includes a suitable pipe or conduit network linking the one or more end effectors to the vacuum source.

In one embodiment, the present invention comprises a system for the handling of fluids, including bodily fluids, such as blood, and/or irrigants, such as saline solutions, within an operating room or clinical setting. Control and handling of such material includes concern for the control of infectious or disease transmission among operating room personnel. Current methods may not achieve optimum prevention of contamination of nursing and physician personnel. Bio-aerosol inhalation is another recognized continuing hazard for patients and operating room personnel.

The present invention, in one embodiment, should reduce or minimize the inhalation of toxic and potentially carcinogenic inhalants and liquids by providing a “no-touch” method of fluid and liquid management for use by operating room personnel. In one embodiment, as depicted in Figure 2, the present invention comprises a central vacuum producing system suitable for collecting both liquid and gaseous material, one or more end effectors for use at a site at which liquid and gaseous material are produced, and a coupling device or connector for operably coupling one or more end effectors to the central vacuum. In this embodiment, the connector may be made of various materials, and may include a suitable liquid monitor or counter such as a flow meter.

In one embodiment, the coupling device or connector of the present invention may include a volumetric measuring device for measuring the amount of bodily fluid or other liquid used during or

produced during a surgical procedure. In one embodiment, the connector of the present invention may comprise suitable liquid and air media and may provide for the separation of liquid from gaseous material, yet involve a single suction source suitable for moving or collecting both liquid and gaseous material. See, for example, Figure 1. In some embodiments, a chemical separator and separation method may be used, for example, a suitable media may be disposed in or adjacent to the port(s) of the connector.

In one embodiment, as depicted in Figures 1 and 3, the embodiment of the connector comprises a body having an inlet side and an outlet side. The outlet side is suitably adapted to be coupled to a typical vacuum port and the inlet side is adapted, as depicted in Figure 3, to operably receive or be coupled to a one or more end effectors or conduit structures leading to the end effectors. See, for example, the ports depicted in Figure 3. Any suitable coupling or connection methods may be used including “quick-release”-type connectors, Leur-type, detent-type connectors, screw-type connectors or bayonet-type connective structures. Additionally, suitable coupling of conduits and the connector of the present invention may be accomplished by simple friction fitting.

Referring to Figure 1, within the body of the connector of the present invention in one embodiment there is a separating structure comprising, in the depicted embodiment, a “trap” adjacent to the inlets or ports for receiving liquid as the gas/liquid combination flows across the top of the trap. The trap structure may include a suitable fluid counter, flow meter or monitor for measuring the quantity of liquid passing into and/or through the trap. Both the original liquid/gas combination picked up from a surgical site and the liquid separated from the gas/liquid material are moved by the vacuum generated by the central vacuum system and are pulled into the wall port of the central vacuum system. Every

conduit portion or gas and liquid flow path in the connector, or a selected conduit portion or flow path, may have a separate liquid/gas separator structure or feature, or they may be one common separator structure.

In one embodiment, the connector structure of the present invention includes more than one inlet, whereby more than one end effector may be coupled to the central vacuum system. Flow rates or vacuum pressures with respect to each of the inlets may be controlled separately to provide for different degrees of suction. For example, in some wand-type end effectors, a lesser degree of suction may be desired, and for certain end effectors, for example, of the “Plume-Away”-type, a greater suction may be desirable to induce a greater flow or to cover a larger area.

In some embodiments, the present invention includes an LED readout for displaying the amount of liquid collected.

In other embodiments of the present invention, the liquid measuring capability may be incorporated in the main-line vacuum portion, i.e., in the wall of the operating room between the connector of the present invention and the wall port, adjacent to the wall port, or in the central mechanical room.

In some embodiments, the “trap” may include a deflector or other suitable device, e.g., a baffle, filter, etc., for optimizing the separation of liquid and gaseous material.

In one embodiment, the present invention may be adapted to provide several suction or vacuum related functions: removal of smoke and gaseous byproducts, general cleaning-type functions such as floor and equipment vacuuming, and liquid removal and measurement. These functions may be accomplished by providing a connector structure which connects a single central vacuum system of the



type disclosed in U.S. Patent 5,264,026 to various end effectors or working tools for providing various gas, liquid and/or solid management or pickup using a vacuum pressure, and an adapter box, depicted in Figure 4, a cannister-like structure for collecting solids.

In terms of method or use, in one embodiment, at the end of a surgical case or procedure, the system of the present invention may be used to clean the floor around the operating room table. Typically, such procedures result in material scattered around the floor which may include plastic wrappers or portions thereof, pieces of suture, needles, sponges, etc., as well as liquid material which needs to be picked up and decontaminated. Thus, in one embodiment, the present invention involves a suitable wall mounted vacuum port connected to a central vacuum source, the connector of the present invention, an additional adapter, or filter, box for collection or separation of solid material and, a suitable conduit connected to the adapter box. The box may include a suitable baffle structure and/or filters to help ensure that solids collect in the collection portion of the box. In one embodiment, the adapter box is adapted to precipitate solid material from a flow of liquid fluid, i.e., solids entrained in liquid /air flowing into the adapter box is precipitated or dropped from the flow, and the flow enters the adapter of the present invention and liquid is separated from the gas and quantities of liquid are assessed, after which time the flow continues into the conduit leading to the central vacuuming system. In one embodiment, the adapter box may be reusable in that it can be emptied wherein debris collected may be disposed of conventionally. In one embodiment, the connector and/or the solids receiving adapter or filter box may be disposable, i.e., a single use type arrangement or they may be completely reusable or reposeable in that they may last for a couple of years and then need to be replaced.

In the instance of reusable and reposable type connectors and/or filter boxes, the connector and/or filter box structures may be decontaminated before a subsequent use by providing a decontamination unit which comprises a suitable container structure adapted to be coupled to the connector and/or the filter box. For example, the decontamination unit may take the form of a collapsible plastic container which contains a pre-measured amount of a decontaminating, disinfecting, sterilizing or cleaning solution. In one embodiment, the decontamination unit is adapted to be attached to the filter box or to the connector, and the contents are then withdrawn upon actuation of the vacuum source. The container collapses and may be disposed. In some embodiments, the decontamination unit may include a decontaminate flow regulating mechanism or structure, and/or decontaminates may be loaded or contained in separate compartments whereby they may be dispensed together, selectively or sequentially.

In one embodiment, the connector unit of the present invention may include an input feature such as a key pad counter, touch screen or the like whereby the quantity of liquid vacuumed up is measured and/or displayed, and wherein a known quantity of liquid, e.g., saline, anesthesia materials, etc., may be input into the device. In this embodiment, a calculation feature, e.g., a microprocessor, is provided whereby the quantity of input liquid may be subtracted from the total displayed volume to calculate, for example, blood loss or saline use during a surgical procedure.

The system and method of the present invention may be used in situations or applications other than the medical field. For example, in certain industries and manufacturing processes, washes or flows of liquid, mists or flows of fluids, are used for cooling or lubricating while a particular procedure is carried out. In these situations, it may be desirable to contain, control or manage the flow of cooling or

lubricating material, and/or gases released during such processes, and to measure the quantity of liquid being used and/or consumed by the process. A system of the type of the present invention may be used for this, and may include, for example, a central vacuum source, a number of end effectors located a number of work stations, and one or more connectors adjacent to the workstations for removably receiving or coupling to the end effectors. Such a system may further include a suitable network of pipes or conduits, and a flow or vacuum regulating feature associated with each connector to adjust the vacuum power or pressure at the working portion of the end effectors.

In one embodiment, the present invention comprises a system for managing fluid comprising: a vacuum source, an end effector spaced from the vacuum source, and a connector interposed between the vacuum source and end effector, the connector having at least one port for receiving both gaseous and liquid fluids. More than one end effector is coupled to the connector. The connector is adapted to separate liquid and gas. The connector is adapted to regulate a vacuum applied by the end effector. The connector comprises a display, and may be provided with a display input.

In one embodiment, the present invention relates to a vacuum system for picking up fluids in an operating room, the system comprising: means for producing a vacuum and means for separating liquid and gas, both the means for producing a vacuum and means for separating liquid and gas remote from the operating room, means for applying the vacuum to a selected location in the operating room, means for defining a flow path operably coupling the means for producing a vacuum and the means for applying a vacuum, and means for operably coupling the means for applying a vacuum to the flow path. The means for operably coupling is adapted to separate liquid and gas. The means for operably coupling is adapted to regulate the vacuum applied by the end effector. The means for operably

coupling comprises means for measuring a quantity of separated liquid, means for displaying the quantity, means for inputting liquid information, means for calculating a difference between the quantity of separated liquid and the liquid information, and means for displaying the quantity and the difference.

In one embodiment, the present invention comprises a vacuum system for picking up fluids and solids present in an operating room, the system comprising: a vacuum source comprising a vacuum producer and a centrifugal separator, at least one end effector, a flow path defined by conduit operably coupling the vacuum source and end effector, the flow path comprising a wall port, and a connector generally between the vacuum source and end effector and removably coupled to the wall port, wherein the connector is adapted to separate liquid and gas. The connector further comprises a measuring device for measuring the amount of liquid picked up and a display device for displaying the amount of liquid picked up. The connector is adapted to separate liquids, gas and solids. The connector further comprises an input for inputting liquid information.

In one embodiment, the present invention relates to a central vacuum system for picking up fluids present at one or more locations at which surgical procedures are performed, the system comprising: a vacuum source comprising a vacuum producer and a centrifugal separator, the vacuum source remote from the one or more locations; a first end effector of one type and a second end effector of another type; a flow path defined by conduit operably coupling the vacuum source and end effectors, the flow path comprising at least one wall port at each of the one or more locations; and a connector generally between the vacuum source and end effector and removably coupled to the wall port, the connector adapted to removably receive the first and second end effectors and to separate liquid and gas and comprising a measuring device for measuring the amount of liquid picked up and a

display device for displaying the amount of liquid picked up. The invention may further comprise an adapter for adapting the connector to separate liquids, gas and solids. The connector further comprises an input for inputting liquid information.

In one embodiment, the present invention central vacuum system for picking up material present at one or more locations at which surgical procedures are performed, the system comprising: a vacuum source comprising a vacuum producer and a centrifugal separator, the vacuum source remote from the one or more locations; a first end effector of one type and a second end effector of another type; a flow path defined by conduit operably coupling the vacuum source and end effectors, the flow path comprising at least one wall port at each of the one or more locations; and a connector generally between the vacuum source and end effectors and removably coupled to the wall port, the connector adapted to removably receive the first and second end effectors, to regulate the vacuum at the first and second end effectors, and to separate liquid and gas, and further comprising a measuring device for measuring the amount of liquid picked up, an input for inputting liquid information, a calculator for calculating a difference between the amount of liquid picked up and the input liquid information, and a display for displaying the amount of liquid picked up and the difference. The connector may be adapted to separate liquids, gas and solids.

The present invention may be embodied in other specific forms without departing from the essential spirit or attributes thereof. It is desired that described embodiments be considered in all respects as illustrative, not restrictive.

Figure 1

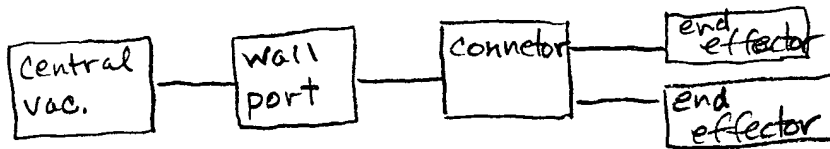


Figure 3

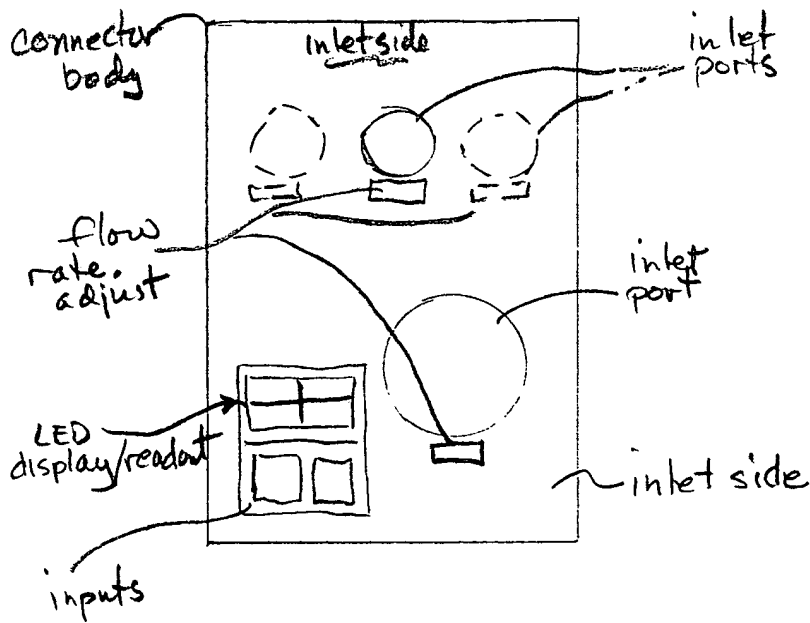


Figure 5

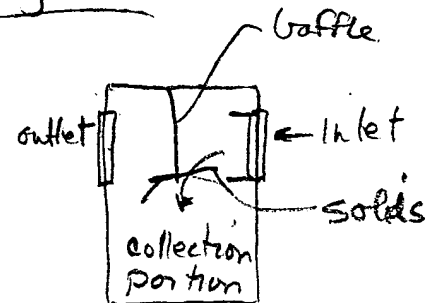
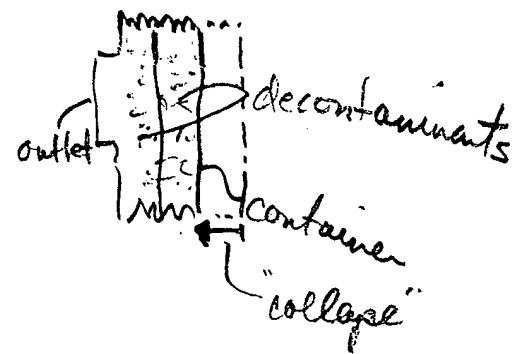


Figure 6



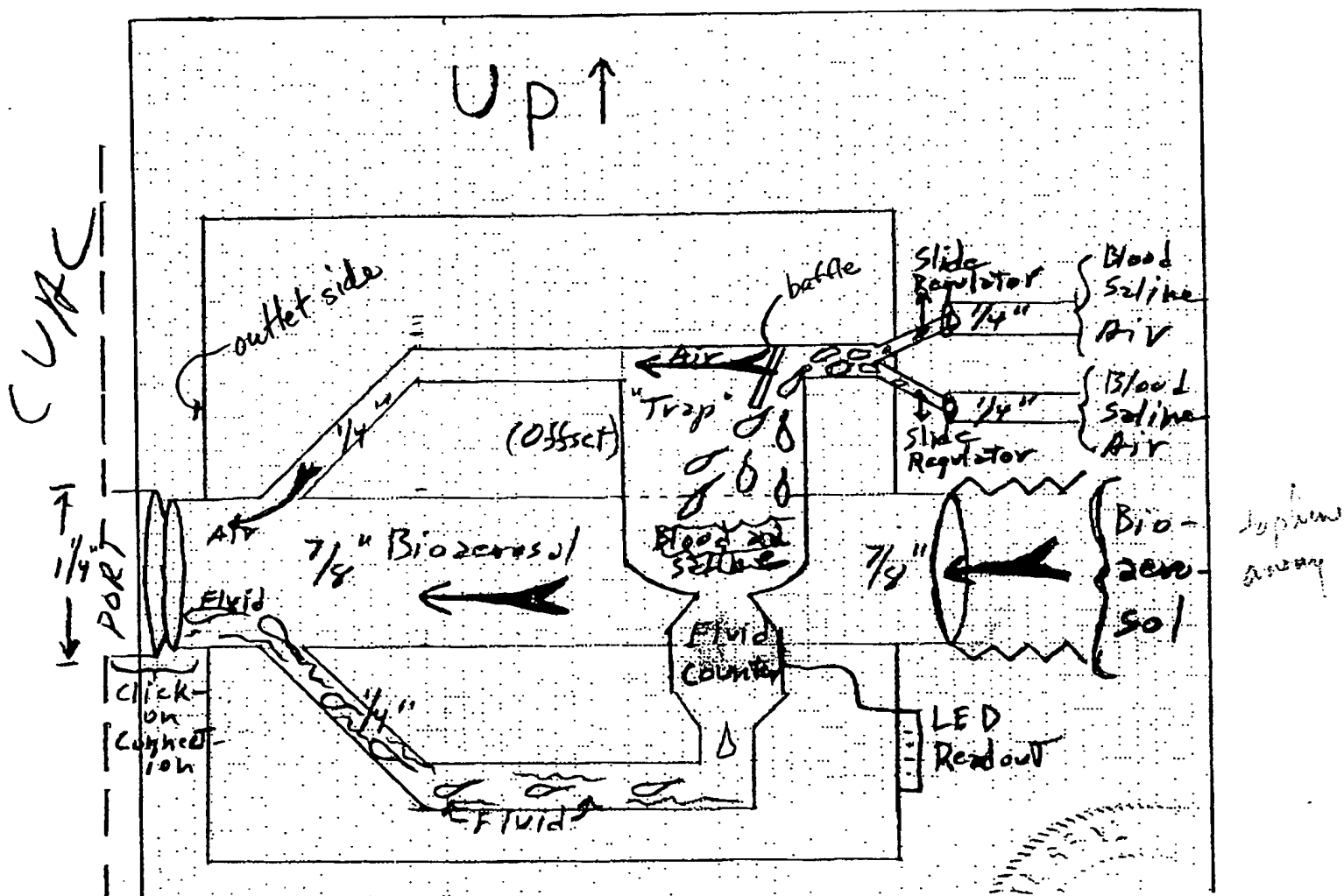
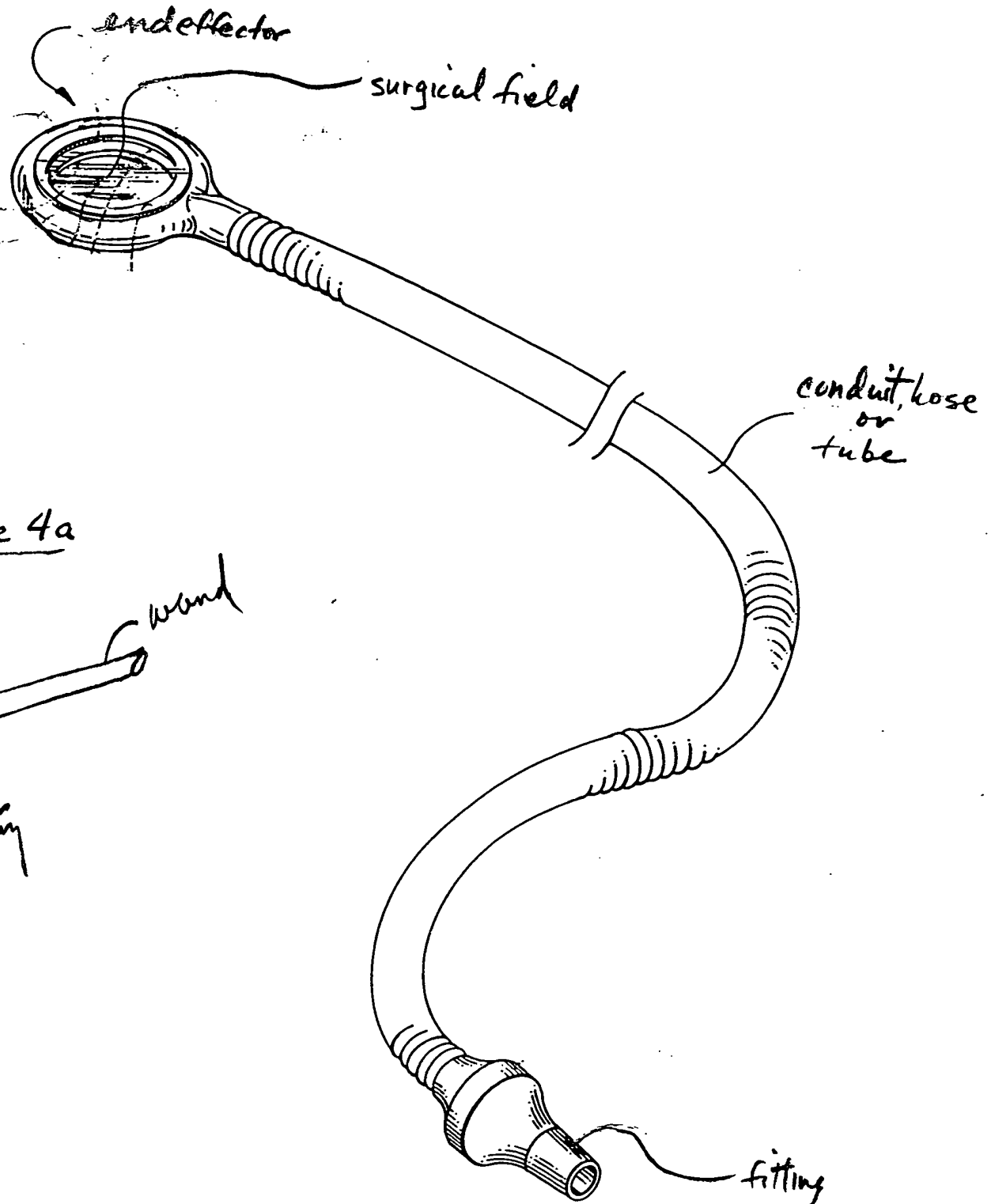
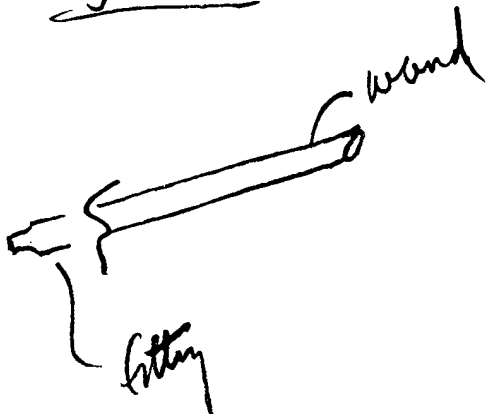


Figure 2

**Figure 4**



**Figure 4a**





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TELEPHONE: (612) 340-2600  
FAX: (612) 340-2868

DAVID E. BRUHN  
(612) 340-6317  
FAX (612) 340-8856  
bruhn.david@dorseyllaw.com

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January 30, 2001

Dr. Leonard S. Schultz  
JLJ Medical Devices, International, LLC  
6504 Walker Street  
Suite 212  
St. Louis Park, Minnesota 55414

Re: U.S. Provisional Patent Application for **Fluid and Bioaerosol Management**  
Inventors: Jeffrey K. Drogue, Leonard S. Schultz, and Barry Thompson  
Our Docket No.: 6970

Dear Dr. Schultz:

Enclosed is a copy of the above provisional patent application as filed on January 29, 2001, incorporating the points we discussed yesterday.

If you have any questions, please contact me.

Very truly yours,

A handwritten signature in cursive script that reads "David Bruhn / SK".

David E. Bruhn

DEB:sk  
Enclosure

EXHIBIT B

# DORSEY & WHITNEY LLP

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February 2, 2001

Mr. Jeff Drogue  
JLJ Medical Devices, International, LLC  
6504 Walker Street  
Suite 212  
St. Louis Park, Minnesota 55414

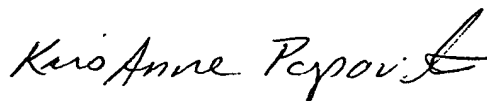
Re: U.S. Provisional Application  
Title: **Fluid and Bioaerosol Management**  
Inventors: Jeffrey K. Drogue, Leonard S. Schultz, and Barry M. Thompson  
Our Docket No.: 6970

Dear Mr. Drogue:

Per your request, enclosed please find the prior art referenced in the specification for the above-identified provisional application.

If you have any questions, please do not hesitate to contact me or David Bruhn.

Very truly yours,



KrisAnne Popovits  
Legal Assistant/Intellectual Property

Enclosures (10)

cc: David E. Bruhn, Esq. (w/o encl.)

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June 30, 2001

Mr. Barry Thompson  
President and Chief Manager  
JLJ Medical Devices, International, LLC  
6504 Walker Street  
Suite 212  
St. Louis Park, Minnesota 55414<sup>26</sup>

Re: U.S. Provisional Patent Application  
Title: **Fluid And Bioaerosol Management**  
Appln. No.: 60/264,871  
Filing Date: January 29, 2001  
Our Dkt No.: 6970

Dear Mr. Thompson:

We enclose a copy of the Official Filing Receipt we recently received from the U.S. Patent and Trademark Office in connection with the above-identified provisional patent application. We will contact you when the deadline for filing foreign and a non-provisional application (**January 29, 2002**) approaches.

To complete the filing formalities, we enclose an Assignment document for signature by the three inventors. The Assignment should be read carefully to be sure the recited facts are correct. If everything is in order, please have each inventor sign and date the document where indicated and return the signed original to us for filing in the U.S. Patent and Trademark Office. It is important to note that the Assignment must be signed by the inventors in the presence of a Notary Public.

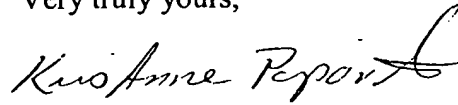
Although there is no deadline for filing, we would appreciate receiving the executed original at your earliest convenience.

**DORSEY & WHITNEY LLP**

Mr. Barry Thompson  
June 30, 2001  
Page 2

If you have any questions please feel free to contact David Bruhn or me.

Very truly yours,

A handwritten signature in cursive script, reading "KrisAnne Popovits". The signature is written in dark ink and is positioned above the printed name and title.

KrisAnne Popovits  
Paralegal/Intellectual Property

Enclosures (2)

cc: David E. Bruhn, Esq. (w/out encl.1)

## ASSIGNMENT

WHEREAS, I, Jeffrey K. Drogue of 5117 Washburn Avenue South, Minneapolis, Minnesota 55410; Leonard S. Schultz of 11036 Boone Circle, Bloomington, Minnesota 55438; and Barry M. Thompson of 6258 Fernbrook Lane North, Maple Grove, Minnesota 55311, have invented of certain new and useful improvements in **FLUID AND BIOAEROSOL MANAGEMENT**, for which a provisional patent application has been filed in the U.S. Patent and Trademark Office; said application being identified in the United States Patent and Trademark Office by Serial No. 60/264,871, filed January 29, 2001, and

WHEREAS, JLJ Medical Devices International, LLC, a corporation organized and existing under the laws of the State of Minnesota, and having a business address at 6504 Walker Street, Suite 212, St. Louis Park, Minnesota 55414, is desirous of acquiring the entire right, title and interest in and to said invention, said application and in, to and under any and all Letters Patent to be obtained therefor;

NOW, THEREFORE, for and in consideration of One Dollar (\$1.00) and other good and valuable consideration to me in hand paid by the said JLJ Medical Devices International, LLC, the receipt of which is hereby acknowledged, I have sold, assigned and transferred, and by these presents do hereby sell, assign and transfer unto said JLJ Medical Devices International, LLC, its successors and assigns, my entire right, title and interest in and to said invention, said application, including all of my rights to file a non-provisional application in the United States, and I do hereby authorize and request the Commissioner of Patents to issue said Letters Patent from said non-provisional application to the above mentioned assignee.

I hereby authorize the above mentioned assignee, its successors and assigns, or anyone it may properly designate, to insert in this instrument the filing date and serial number of said application when ascertained.

I hereby authorize said assignee, its successors and assigns, or anyone it may properly designate, to apply for Letters Patent, in its own name if desired, in any and all foreign countries, and additionally to claim the filing date of said United States applications and/or otherwise take advantage of the provisions of the International Convention.

Upon Said Consideration, I do hereby covenant and agree with the said Assignee, its successors and assigns, that I will not execute any writing or do any act whatsoever conflicting with these presents, and that I or my executors or administrators will at any time upon request, without further consideration, but at the expense of said Assignee, its successors or assigns, execute such additional writings and do such additional acts as said Assignee, its successors or assigns, may deem necessary or desirable to perfect the Assignee's enjoyment of this grant, and render all necessary assistance in making application for and obtaining original, divisional, reissued or extended Letters Patent of the United States, or of any and all foreign countries on said invention, and in enforcing any rights occurring as a result of such applications or patents, by giving testimony in any proceedings or transactions involving such applications or patents.

In Witness Whereof, I have hereunto set my hand and affixed my seal this \_\_\_\_\_ day  
of \_\_\_\_\_, 2001.

\_\_\_\_\_  
Jeffrey K. Drogue

Subscribed to and sworn to before  
me this \_\_\_\_\_ day of \_\_\_\_\_, 2001.

\_\_\_\_\_  
Notary Public

Notary Seal

In Witness Whereof, I have hereunto set my hand and affixed my seal this \_\_\_\_\_ day  
of \_\_\_\_\_, 2001.

\_\_\_\_\_  
Leonard S. Schultz

Subscribed to and sworn to before  
me this \_\_\_\_\_ day of \_\_\_\_\_, 2001.

\_\_\_\_\_  
Notary Public

Notary Seal

In Witness Whereof, I have hereunto set my hand and affixed my seal this \_\_\_\_\_ day  
of \_\_\_\_\_, 2001.

\_\_\_\_\_  
Barry M. Thompson

Subscribed to and sworn to before  
me this \_\_\_\_\_ day of \_\_\_\_\_, 2001.

\_\_\_\_\_  
Notary Public

Notary Seal

**Bruhn, David**

---

**From:** Bruhn, David  
**Sent:** Tuesday, July 02, 2002 3:57 PM  
**To:** 'jeffrey drogue'  
**Subject:** RE: lap ses patent

Jeff, thanks for the note. I think Dr. Schultz will be ok, but we will certainly consider submitting some additional claims and/or a continuation application.

On another subject, I left a voice mail on your cell today. As you know from talking to Jean and Dr. Schultz, we need to have you sign a Power of Attorney and an assignment for the "fluid management" invention/application. I have enclosed an e-copy of them, thinking you can simply print and sign them, then fax or mail them back to me. I guess I would prefer fax. Or, if it would be easier, you could drop them off here.

Please call if you have any questions. Thanks, David

-----Original Message-----

**From:** jeffrey drogue [mailto:jdrougue@mn.rr.com]  
**Sent:** Friday, June 21, 2002 6:02 PM  
**To:** bruhn.david@dorseyllaw.com  
**Cc:** lschultz@jlijintl.com  
**Subject:** lap ses patent

Dear David,

It's been a while.

I ran into Leonard today and he told me about some new opportunities in the area of smoke evacuation and the laparoscopic patent.

I don't know if he still has email at JLJ, but I thought I would send you this notification and try to reach him by telephone.

I understand he has been researching the use of the laparoscopic filter with the ultrasonic scalpel.

I had a number of experiences with that during my time at JLJ.

One of the big hassles was the ultrasonic scalpel does not make smoke - rather it makes mist.

This mist lacks one ingredient - smoke, but contains a mist which effectively saturates the paper filter material rendering the device unsuitable after only a few minutes of use.

Leonard told me he has been working on a solution.

I think the solution may be patentable - if only as an extension to the existing, but it should be something done prior to his proposed visit to Ethicon.

My solution:

**EXHIBIT E**

11/7/2002



1. Extend the claims to ensure they cover the ultrasonic cutting device - right now I believe we only cover cautery and laser.
2. Extend the claims to included filter media that is both hydrophobic and hydrophilic. I think the solution lies in finding a filter media that permits the flow of gas while catching and shedding the fluid or mist.
3. Extend the claims to include a larger housing capable of "storing" said liquid that is removed via the filter medium while not permitting the outflow of fluid into the field - that would be the same type of filter material extended over the outflow port.
4. Extend the patent to allow for a filter that does not have a carbon element - **since the ultrasonic scalpel does not produce smoke - it does not produce the smell like cautery or laser, therefore the filter medium is probably not necessary!!!**

I don't know how this fits with the existing patent - but I am concerned that Leonard may inadvertently give up a window of opportunity to Ethicon - particularly if the terms ultrasonic was not included and if the carbon element is able to be eliminated.

I'll try to cc this to Leonard - otherwise I'll call his office.

Take care,

Jeff

**Bruhn, David**

---

**From:** jeffrey drogue [jdrogue@mn.rr.com]  
**Sent:** Monday, July 08, 2002 4:01 PM  
**To:** Bruhn, David  
**Subject:** Read: lap ses patent



ATT1012572.TXT

This is a receipt for the mail you sent to  
"jeffrey drogue" <jdrogue@mn.rr.com> at 7/2/02 3:56 PM

This receipt verifies that the message has been displayed on the recipient's computer at  
7/8/02 4:00 PM

**EXHIBIT F**